

BeAGLE Status

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- 1) Energy Conservation
- 2) BeAGLE 1.0 release
- 3) PyQM & E665 data

Energy nonconservation bugs!

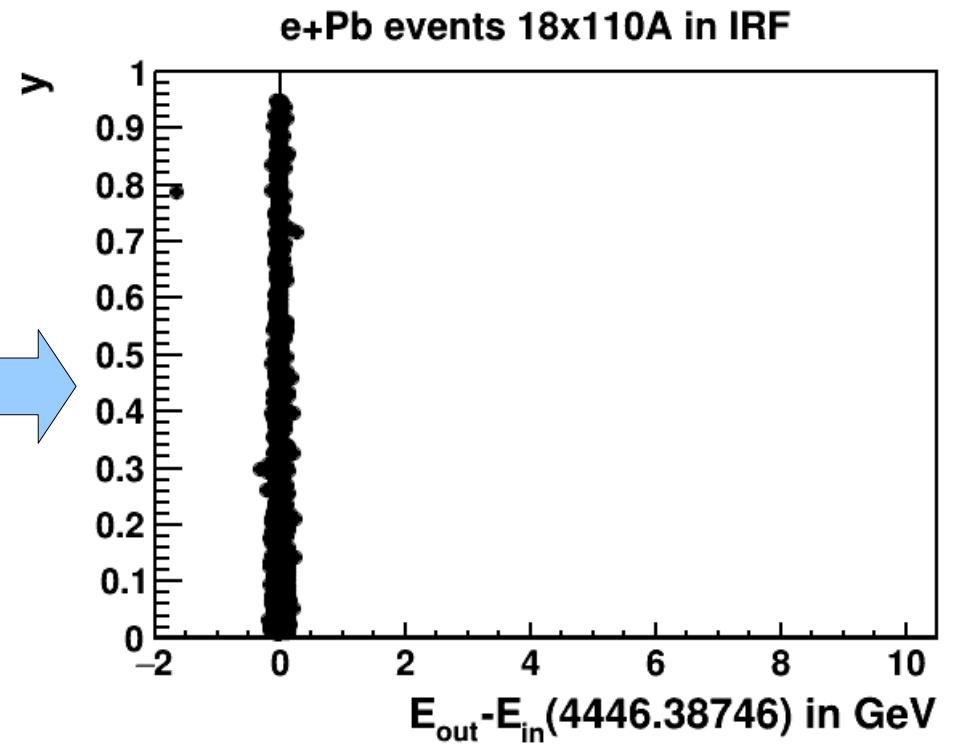
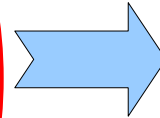
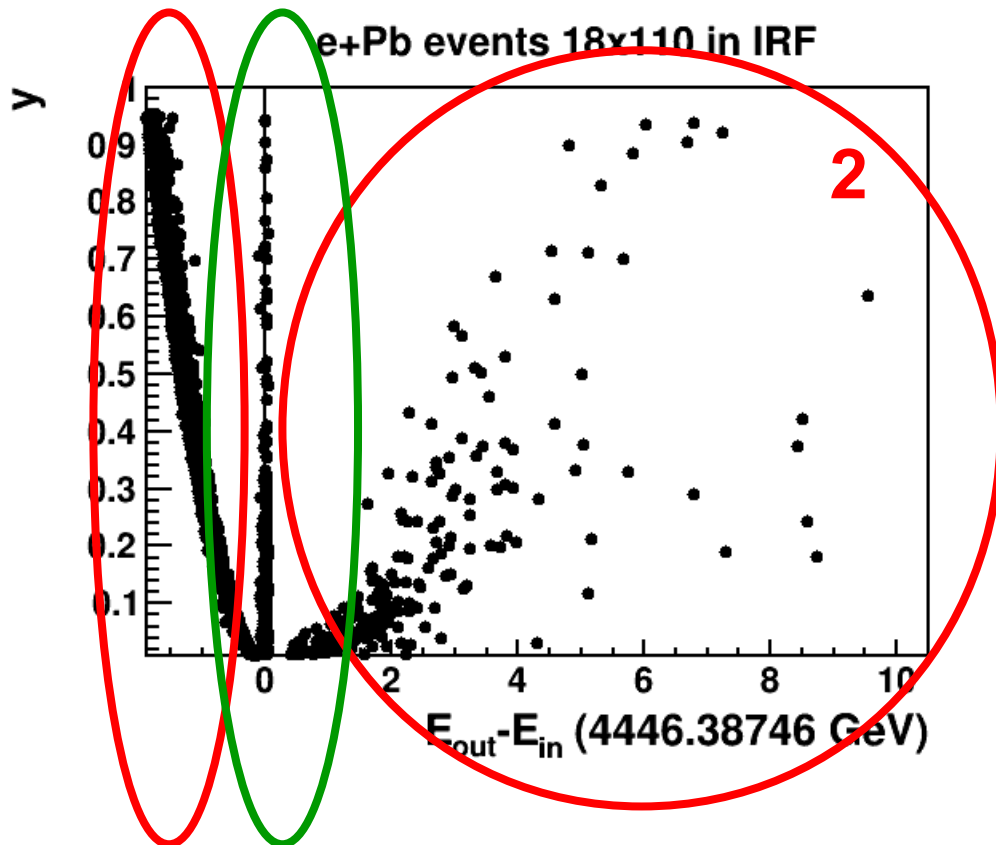
The problem(s) in order of frequency:

1: 95%

2: 2.5%

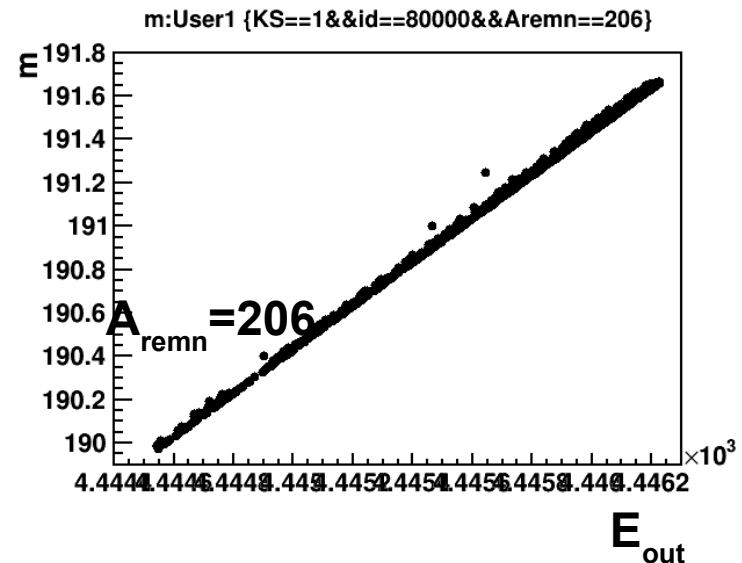
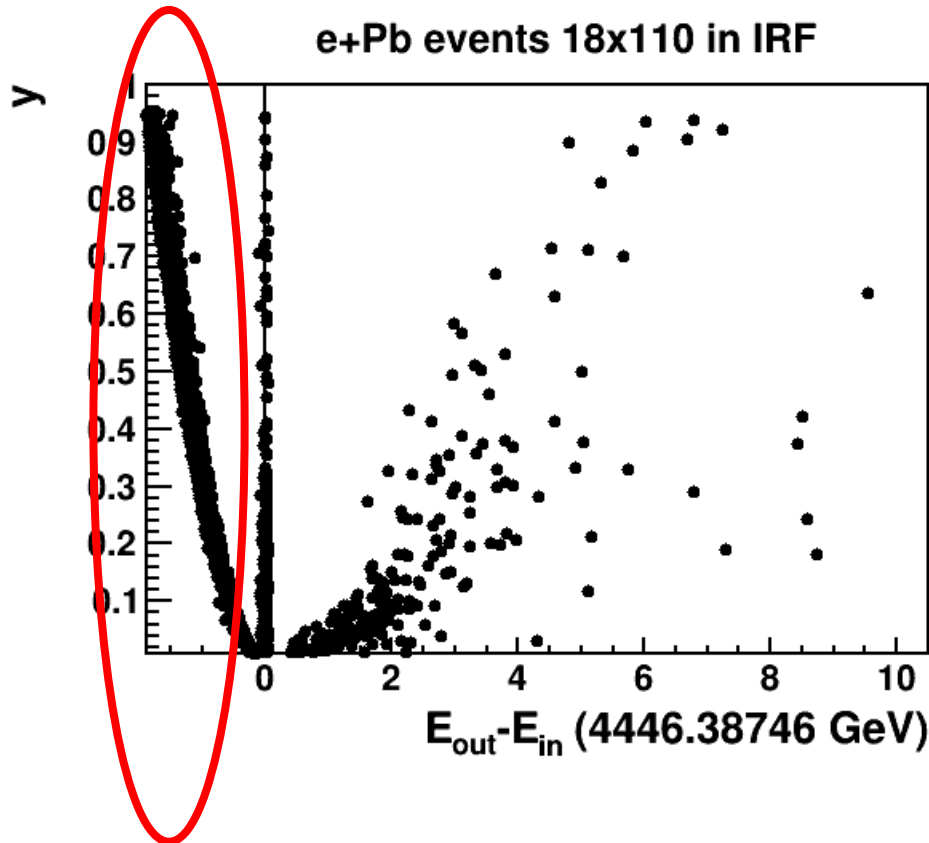
(3 was Z error /fixed)

1 $E_{\text{out}} - E_{\text{in}}$ should be zero



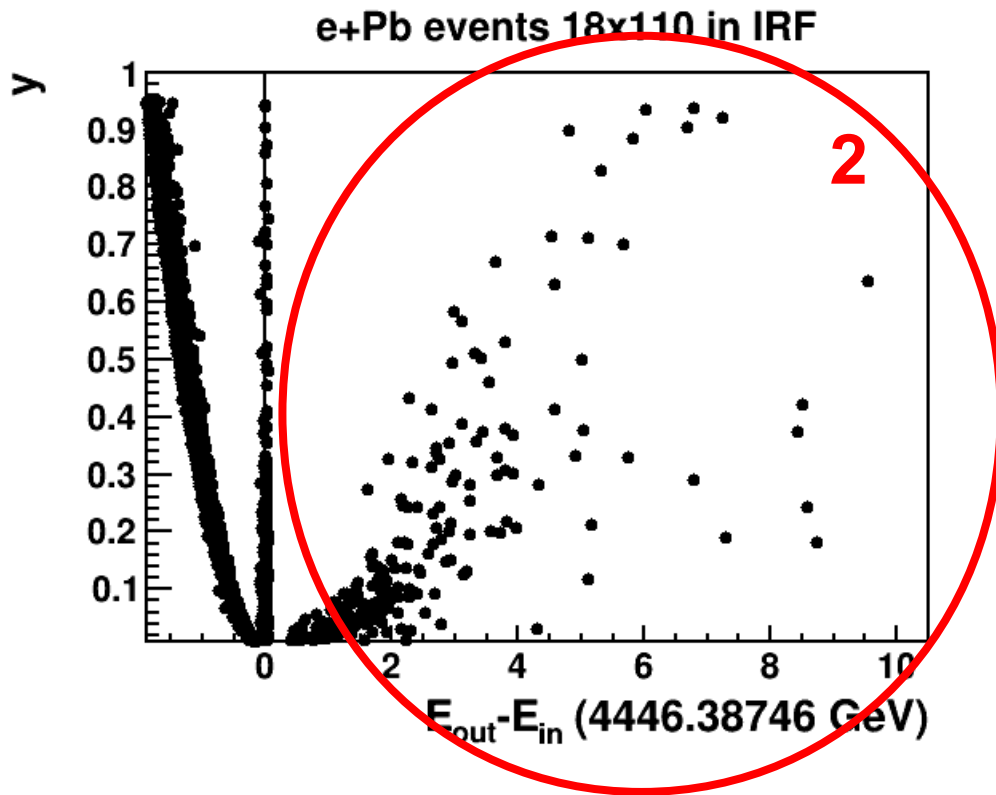
Energy loss bug

- Type 1 events were due to a bug in DPMJET-F.** A perfectly valid excited remnant has its 3-momentum scaled to a slightly incorrect value, leading to an inconsistent description in terms of p^μ, M, E^* . This confuses Fluka which returns the final ground state nuclear remnant with the wrong mass, e.g.:
- 1

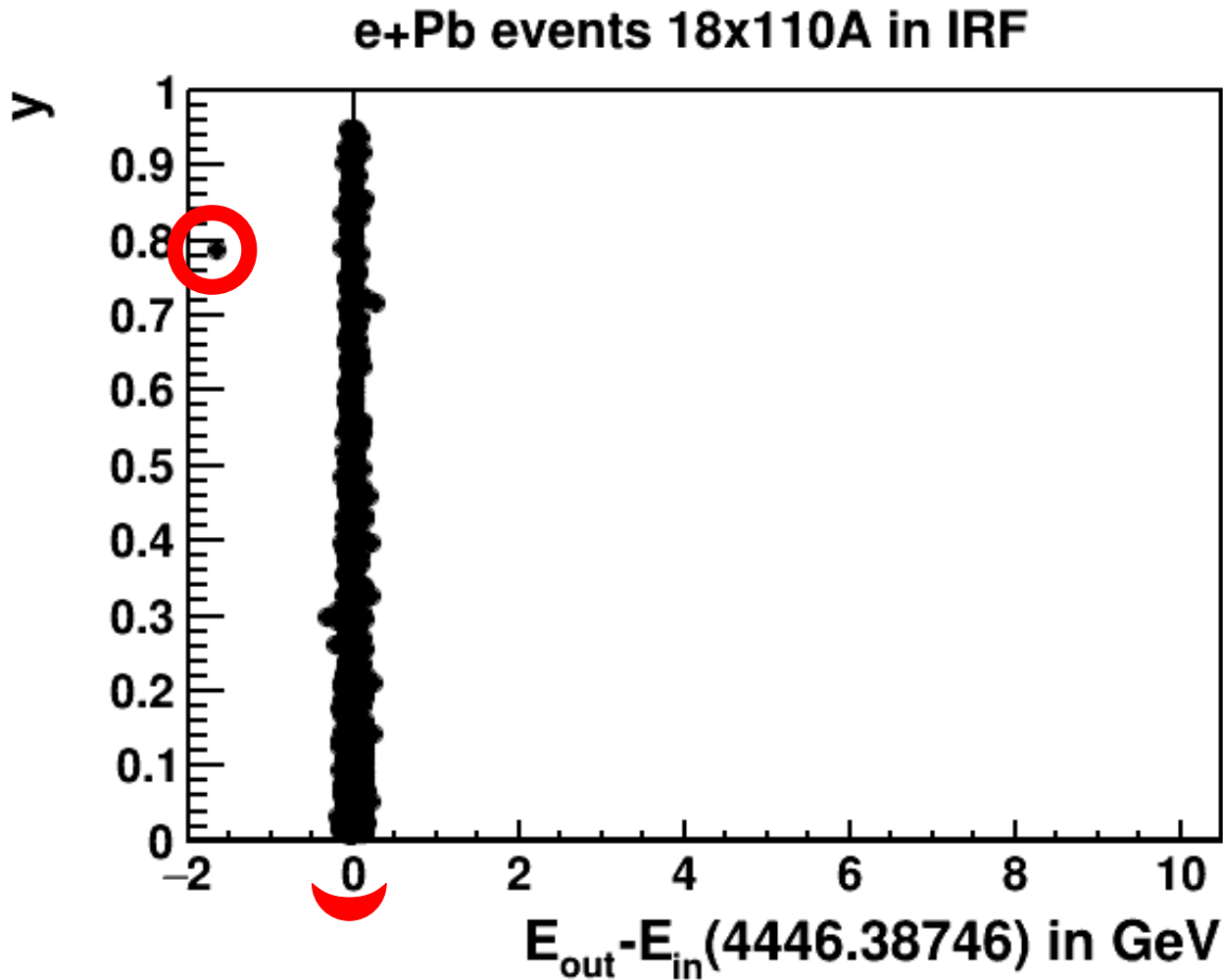


Energy gain bug

Type 2 was caused by a bug in BeAGLE during an Intranuclear cascade. A low energy meson in the ion rest frame can sometimes be put back into the Pythia subevent which is in the γ^*+N HCMS frame without first applying the proper boost.



Not perfect, but much better

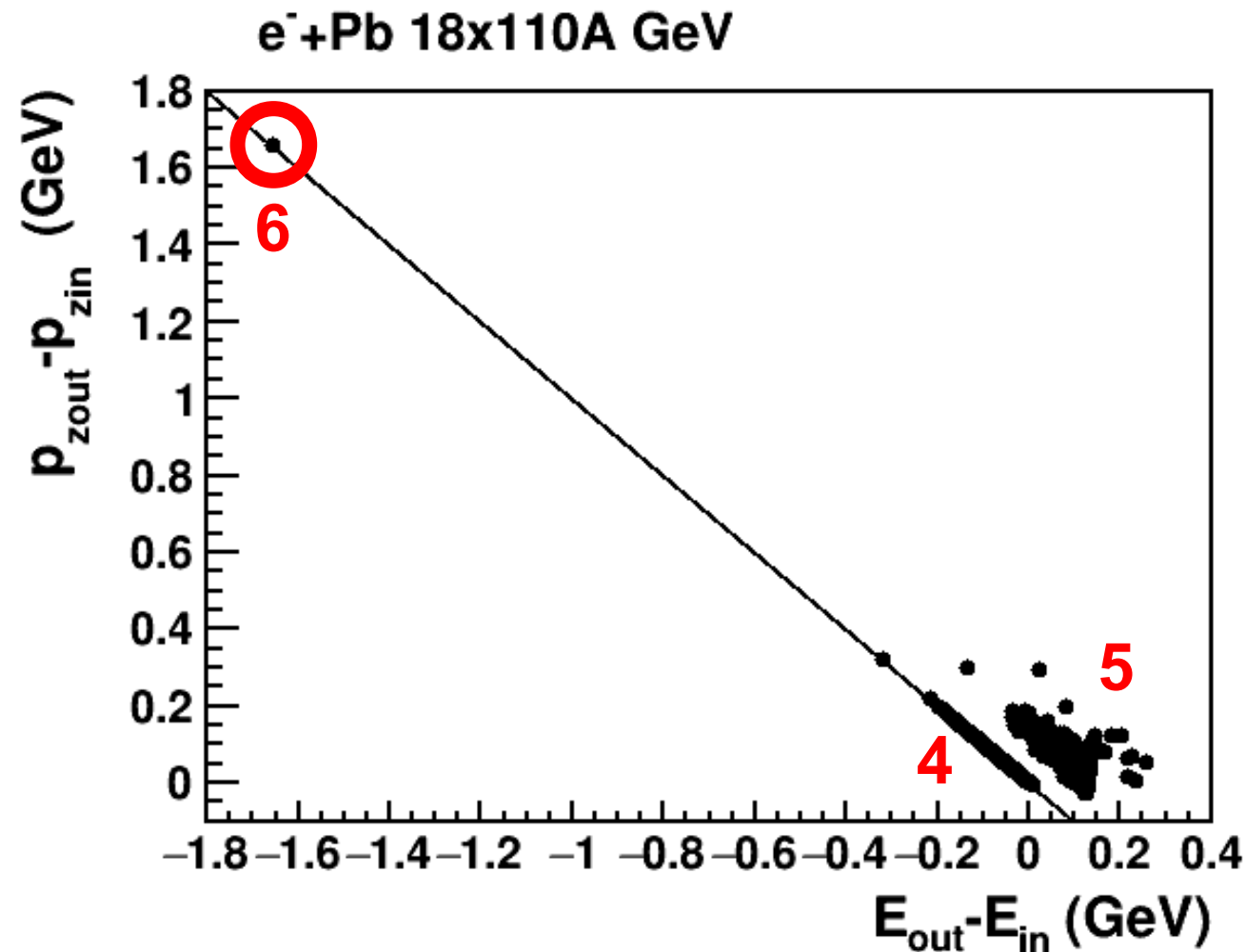


Occasional bad events
@ 1/10000 level.

ΔE is not exactly 0.

Annoying, but not highest
priority right now.

Lower priority issues



4. Most events have E_{out} off by ~ 0.1 GeV (low) w/ $E + p_z$ correct.

5. Roughly 2.5% of events have E_{out} off by ~ 0.1 GeV (high) w/ $E + p_z$ wrong. (INC events...)

6. Occasional bad events @ 1/10000 level.

Annoying, but not highest priority right now.

BeAGLE 1.0 tag & release

- Collect all work into a release & tag it (in git).
 - Mark – GCF capability. Bugfixes etc.
 - PyQM team (Dupré et al.) - testing
 - Kong Tu – $n(k)$ extensions for D and higher A
 - Liang Zheng – vector meson decay handling
- Include a few example input files
- Install @ BNL & JLAB
 - My version is at .../PACKAGES/BeAGLE
- Singularity container (Mathieu Ehrhart)
- Should take about one more week.

PyQM – radiative jet quenching in eA

- Original model in BeAGLE from Accardi, Dupré code based on Salgado Wiedemann theory.
- Crucial flaws in original BeAGLE/PyQM:
 - Big energy nonconservation
 - Or one hard gluon, so mostly swap g for q jet
- Raphaël Dupre – INP Orsay + students
 - Mathieu Ehrhardt (implemented recent code)
 - Carolina Michel Robles Gajardo (new student)
- Problems fixed. Energy conserved. Multiple PYJOINED gluons can be emitted.

Physics agendas – join forces? Or what?

- We have been planning for 2-3 years to try and fit E665 SC data w/o PyQM.
- Raphaël has been proposing joining forces (also for 2 years) to fit E665 SC data using PyQM
- PyQM **NOW** can serve as a model for modified fragmentation in eA.
 - Maybe not as good as Elke's ideas, but a reasonable first step!
 - It may not be possible to fit E665 w/o PyQM!
 - Generates charged particles more gently (small Nnevap)

More PyQM issues

- PyQM can only be run in BeAGLE now!
- Raphaël agrees that it is perfectly reasonable to run the final state parton shower AFTER PyQM.
- I need to fix:
 - Allow ISPS + FSPS with PyQM
 - Allow PyQM to be turned off (should = $q\text{-hat}=0$)
- Not sure about $\text{genShd}>1$ & PyQM
 - In principle, should also be possible, but I think that it is currently not allowed.

Summary

- Major energy conservation bugs fixed
 - Minor bugs at the back of the list
- BeAGLE release underway (→Aug.15)
- Invite Mathieu/Raphael to explain new PyQM?
 - Are gluons quenched?
- Not 100% sure how to proceed on E665
 - Collaborate on the whole thing?
 - Focus on narrower question alone?
 - In any case, I owe a better trigger simulation algorithm and/or a better acceptance table/plot